Amendments to the Claims

Claim 1 (currently amended): A high density capillary array electrophoresis plate comprising:

an array of parallel microfabricated separation channels formed on a surface of a first microfabricated substrate and a corresponding surface of a second substrate bonded to the surface of said first substrate, each of said channels having a first end and a second end;

an array of sample ports on a first surface of said capillary array electrophoresis plate; ~~and~~

an array of sample passageways connecting said array of sample ports and said array of separation channels, wherein each of said array of sample passageways is perpendicular to said first surface of said capillary array electrophoresis plate;

an array of waste ports on a second surface of said capillary array electrophoresis plate;

an array of waste passageways connecting said array of waste ports and said array of separation channels, wherein each of said array of waste passageways is perpendicular to said second surface of said capillary array electrophoresis plate;

a waste reservoir mount mounted on said second surface of said capillary array electrophoresis plate; and

at least one electrode coupleable to said waste reservoir mount;

wherein each separation channel of the plurality of separation channels is in fluid communication with at least one dedicated sample port through one of said array of sample passageways, and is in fluid communication with said waste reservoir through one of said array of waste ports.

Claim 2 (cancelled)

Claim 3 (currently amended): The capillary array electrophoresis plate of claim ~~2~~ 1, wherein each of said array of sample passageways and each of said array of waste passageways forms a single passageway, connecting to one of said array of microfabricated separation channels.

Claim 4 (original): The capillary array electrophoresis plate of claim 1 wherein said array of sample ports are regularly spaced on the plate and adapted to engage a parallel loading device.

Claim 5 (original): The capillary array electrophoresis plate of claim 4, wherein the parallel loading device comprises an array of capillaries.

Claim 6 (original): The capillary array electrophoresis plate of claim 4, wherein the parallel loading device comprises an array of metal pens.

Claim 7 (original): The capillary array electrophoresis plate of claim 1 further comprising:

an array of cathode ports on the first surface of said capillary array electrophoresis plate, each connected to said first end of each of the separation channels; and

an array of anode ports on the first surface of said capillary array electrophoresis plate, each connected to said second end of each of the separation channels.

Claim 8 (original): The capillary array electrophoresis plate of claim 7 further comprising:

electrode arrays coupleable to each of said cathode and anode ports.

Claim 9 (original): The capillary array electrophoresis plate of claim 1 further comprising:

a common cathode reservoir connected to said first end of each of the separation channels;

a common anode reservoir connected to said second end of each of the separation channels;

an electrode for said common cathode reservoir; and

an electrode for said common anode reservoir.

Claim 10 (original): The capillary array electrophoresis plate of claim 9 wherein said common anode and cathode reservoirs are enclosed and each has a buffer loading port on the first surface of said capillary array electrophoresis plate.

Claim 11 (currently amended): ~~The~~ A capillary array electrophoresis plate system, comprising:

a capillary array electrophoresis plate including: an array of parallel microfabricated separation channels formed on a surface of a first microfabricated

substrate and a corresponding surface of a second substrate bonded to the surface of said first substrate, each of said channels spans the full length of the plate and has a first end and a second end;

an array of sample ports on a first surface of said capillary array electrophoresis plate;

an array of sample passageways connecting said array of sample ports and said array of separation channels, wherein each of said array of sample passageways is perpendicular to said first surface of said capillary array electrophoresis plate;

a cathode mount attached to the first end of said capillary array electrophoresis plate;

an anode mount attached to the second end of said capillary array electrophoresis plate;

an electrode in said cathode mount; and

an electrode in said anode mount;

wherein each separation channel of the plurality of separation channels is in fluid communication with at least one dedicated sample port through one of said array of sample passageways.

Claim 12 (currently amended): A method of forming a capillary array electrophoresis plate, comprising:

forming an array of microfabricated separation channels having a first end and a second end;

forming an array of sample ports on a first surface of said capillary array electrophoresis plate;

connecting the array of sample ports to the array of microfabricated separation channels through an array of sample passageways;

forming an array of cathode ports on the first surface of said capillary array electrophoresis plate, each connected to said first end of each of the separation channels;

forming an array of anode ports on the first surface of said capillary array electrophoresis plate, each connected to said second end of each of the separation channels;

connecting an electrode array to each of said array of cathode ports; ~~and~~

connecting an electrode array to each of said array of anode ports;

forming an array of waste ports on a second surface of said capillary array electrophoresis plate;

connecting the array of waste ports and the array of separation channels through an array of waste passageways, wherein each of said array of waste passageways is perpendicular to said second surface of said capillary array electrophoresis plate;

forming a waste reservoir mount;

mounting said waste reservoir mount on said second surface of said capillary array electrophoresis plate; and

coupling at least one electrode to said waste reservoir mount;

wherein each separation channel of the plurality of separation channels is in fluid communication with said waste reservoir through one of said array of waste ports.

Claim 13 (currently amended): A method of forming a capillary array electrophoresis plate, comprising:

forming an array of microfabricated separation channels having a first end and a second end;

forming an array of sample ports on a first surface of said capillary array electrophoresis plate;

connecting the array of sample ports to the array of microfabricated separation channels through an array of sample passageways;

connecting a common cathode reservoir to said first end of each of said array of separation channels;

connecting a common anode reservoir to said second end of each of said array of separation channels;

connecting an electrode to said cathode reservoir; ~~and~~

connecting an electrode to said anode reservoir;

forming an array of waste ports on a second surface of said capillary array electrophoresis plate;

connecting the array of waste ports and the array of separation channels through an array of waste passageways, wherein each of said array of waste passageways is perpendicular to said second surface of said capillary array electrophoresis plate;

forming a waste reservoir mount;

mounting said waste reservoir mount on said second surface of said capillary array electrophoresis plate; and

coupling at least one electrode to said waste reservoir mount;

wherein each separation channel of the plurality of separation channels is in fluid communication with said waste reservoir through one of said array of waste ports.

Claim 14 (cancelled)

Claim 15 (currently amended): The method of claim ~~12 or~~ 13, wherein a distance from each cathode port to a point where a sample port of said array of sample ports is connected to said channel is approximately equal for each separation channel.

Claim 16 (original): A method of forming a capillary array electrophoresis plate, comprising:

forming a capillary array electrophoresis plate including: an array of parallel microfabricated separation channels formed on a surface of a first microfabricated substrate and a corresponding surface of a second substrate bonded to the surface of said first substrate, each of said channels spans the full length of the plate and has a first end and a second end;

forming an array of sample ports on a first surface of said capillary array electrophoresis plate;

connecting said array of sample ports and said array of separation channels through an array of sample passageways, wherein each of said array of sample passageways is perpendicular to said first surface of said capillary array electrophoresis plate;

attaching a cathode mount to the first end of said channels;

attaching an anode mount to the second end of said channels;

coupling an electrode in said cathode mount; and

coupling an electrode in said anode mount;

wherein each separation channel of the plurality of separation channels is in fluid communication with at least one dedicated sample port through one of said array of sample passageways.

Claim 17 (original): The method of claim 16, wherein a distance from each cathode port to a point where a sample port of said array of sample ports is connected to said channel is approximately equal for each separation channel.

Claim 18 (original): A method for injecting multiple samples into separation channels on a capillary array electrophoresis plate, comprising:

forming an array of microfabricated separation channels having a first end and a second end;

forming an array of sample ports on a first surface of said capillary array electrophoresis plate;

connecting the array of sample port to the array of microfabricated separation channels through an array of sample passageways;

connecting a common cathode reservoir to said first end of each of said array of separation channels;

connecting a common anode reservoir to said second end of each of said array of separation channels;

connecting an electrode to said cathode reservoir;

connecting an electrode to said anode reservoir;

loading an array of capillaries with sample solutions;

contacting each of said array of capillaries with a sample port of said array of sample ports; and

applying an injection voltage between the sample capillary and the anode reservoir to draw the sample into the separation channels.

Claim 19 (original): A method for injecting multiple samples into separation channels on a capillary array electrophoresis plate, comprising:

forming an array of microfabricated separation channels having a first end and a second end;

forming an array of sample ports on a first surface of said capillary array electrophoresis plate;

connecting the array of sample port to the array of microfabricated separation channels through an array of sample passageways;

attaching a cathode mount to the first end of said channels;

attaching an anode mount to the second end of said channels;

coupling an electrode in said cathode mount;

coupling an electrode in said anode mount;

loading an array of capillaries with sample solutions;

contacting each of said array of capillaries with a sample port of said array of sample ports; and

applying an injection voltage between the sample capillary and the anode reservoir to draw the sample into the separation channels.

Claim 20 (original): A method for injecting multiple samples into separation channels on a capillary array electrophoresis plate, comprising:

forming an array of microfabricated separation channels having a first end and a second end;

forming an array of sample ports on a first surface of said capillary array electrophoresis plate;

connecting the array of sample port to the array of microfabricated separation channels through an array of sample passageways;

connecting a common cathode reservoir to said first end of each of said array of separation channels;

connecting a common anode reservoir to said second end of each of said array of separation channels;

connecting an electrode to said cathode reservoir;

connecting an electrode to said anode reservoir;

loading an array of metal pens with sample solutions;

contacting each of said array of pens with a sample port of said array of sample ports; and

applying an injection voltage between the pens and the anode reservoir to draw the sample into the separation channels.

Claim 21 (original): A method for injecting multiple samples into separation channels on a capillary array electrophoresis plate, comprising:

forming an array of microfabricated separation channels having a first end and a second end;

forming an array of sample ports on a first surface of said capillary array electrophoresis plate;

connecting the array of sample port to the array of microfabricated separation channels through an array of sample passageways;

attaching a cathode mount to the first end of said channels;

attaching an anode mount to the second end of said channels;

coupling an electrode in said cathode mount;

coupling an electrode in said anode mount;

loading an array of metal pens with sample solutions;

contacting each of said array of pens with a sample port of said array of sample ports; and

applying an injection voltage between the sample pen and the anode reservoir to draw the sample into the separation channels.

Claim 22 (new): The method of claim 12, wherein a distance from each cathode port to a point where a sample port of said array of sample ports is connected to said channel is approximately equal for each separation channel.